IN THE CLAIMS

Please amend claims 1 and 16 as follows:

1. (CURRENTLY AMENDED) A ~~distributed digital control~~ circuit device comprising:

a digital drive controller circuit for producing a drive signal for exciting a drive mode of a vibratory gyroscope to a substantially constant amplitude from a drive mode response signal;

a digital rebalance controller circuit for producing a sense rebalance signal from a sense mode response signal to regulate a sense mode of the vibratory gyroscope to substantially zero; and

a digital demodulator for demodulating the sense rebalance signal with the drive mode response signal to produce a digital rate estimate of the vibratory gyroscope;

wherein the digital drive controller circuit, digital rebalance controller circuit and digital demodulator comprise a distributed digital control circuit.

2. (ORIGINAL) The circuit device of claim 1, wherein the digital drive controller circuit, the digital rebalance controller circuit and the digital demodulator are implemented on a single application specific integrated circuit (ASIC).

3. (ORIGINAL) The circuit device of claim 1, wherein the drive mode response signal and the sense mode response signal are combined separately in the digital drive controller circuit and in the digital rebalance controller circuit to aid in isolating the drive and sense modes.

4. (ORIGINAL) The circuit device of claim 3, wherein the drive mode response signal and the sense mode response signal are combined separately in the digital drive controller circuit and in the digital rebalance controller circuit each with a pair of programmable amplifiers.

5. (ORIGINAL) The circuit device of claim 3, wherein the drive mode response signal and the sense mode response signal are combined separately in the digital drive controller circuit and in the digital rebalance controller circuit each with a pair of programmable filters.

6. (ORIGINAL) The circuit device of claim 1, wherein the drive signal and the sense rebalance signal are combined separately to excite the drive mode and regulate the sense mode to aid in isolating the drive and sense mode.

7. (ORIGINAL) The circuit device of claim 6, wherein the drive signal and the sense rebalance signal are combined with a separate pair of programmable amplifiers to each excite the drive mode and regulate the sense mode.

8. (ORIGINAL) The circuit device of claim 6, wherein the drive signal and the sense rebalance signal are combined with a separate pair of programmable filters to each excite the drive mode and regulate the sense mode.

9. (ORIGINAL) The circuit device of claim 1, wherein the digital drive controller circuit comprises an automatic gain control for exciting the drive mode to the substantially constant amplitude.

10. (ORIGINAL) The circuit device of claim 1, wherein the digital drive controller circuit and the digital rebalance controller circuit are programmable to match the vibratory gyroscope.

11. (ORIGINAL) The circuit device of claim 10, wherein the programmable digital drive controller circuit and the programmable digital rebalance controller circuit each comprise one or more programmable finite impulse response (FIR) filters programmed to match the vibratory gyroscope.

12. (ORIGINAL) The circuit device of claim 10, wherein the programmable digital drive controller circuit and the programmable digital rebalance controller circuit comprise one or more programmable amplifiers.

13. (ORIGINAL) The circuit device of claim 12, wherein the one or more programmable amplifiers comprise a pair of programmable amplifiers, each pair programmed to combine separately the drive mode response signal and the sense mode response signal in the digital drive controller circuit and in the digital rebalance controller circuit to aid in isolating the drive and sense modes.

14. (ORIGINAL) The circuit device of claim 12, wherein the one or more programmable amplifiers comprise a pair of programmable amplifiers, each pair programmed to combine separately the drive signal and the sense rebalance signal to excite the drive mode and regulate the sense mode to aid in isolating the drive and sense modes.

15. (ORIGINAL) The circuit device of claim 1, wherein the digital drive controller circuit comprises an automatic gain control for exciting the drive mode to the substantially constant amplitude and the programmable digital drive controller circuit and the programmable digital rebalance controller circuit each comprise one or more programmable finite impulse response (FIR) filters programmed to match the vibratory gyroscope;

wherein the drive mode response signal and the sense mode response signal are combined separately in the digital drive controller circuit and in the digital rebalance controller circuit each with a pair of programmable amplifiers and the drive signal and the sense rebalance signal are combined with a separate pair of programmable amplifiers to each excite the drive mode and regulate the sense mode; and

wherein the digital drive controller circuit, the digital rebalance controller circuit and the demodulator are implemented on a single application specific integrated circuit (ASIC).

16. (CURRENTLY AMENDED) A method of operating a vibratory gyroscope comprising the steps of:

producing a drive signal for exciting a drive mode of a vibratory gyroscope with a digital drive controller circuit to a substantially constant amplitude from a drive mode response signal;

producing a sense rebalance signal from a sense mode response signal with a digital rebalance controller circuit to regulate a sense mode of the vibratory gyroscope to substantially zero; and

demodulating the sense rebalance signal with the drive mode response signal using a demodulator to produce a digital rate estimate of the vibratory gyroscope;

wherein the digital drive controller circuit, digital rebalance controller circuit and digital demodulator comprise a distributed digital control circuit.

17. (ORIGINAL) The method of claim 16, wherein the digital drive controller circuit, the digital rebalance controller circuit and the demodulator are implemented on a single application specific integrated circuit (ASIC).

18. (ORIGINAL) The method of claim 16, further comprising combining separately the drive mode response signal and the sense mode response signal in the digital drive controller circuit and in the digital rebalance controller circuit to aid in isolating the drive and sense modes.

19. (ORIGINAL) The method of claim 18, further comprising combining separately the drive mode response signal and the sense mode response signal in the digital drive controller circuit and in the digital rebalance controller circuit each with a pair of programmable amplifiers.

20. (ORIGINAL) The method of claim 18, further comprising combining separately the drive mode response signal and the sense mode response signal in the digital drive controller circuit and in the digital rebalance controller circuit each with a pair of programmable filters.

21. (ORIGINAL) The method of claim 16, further comprising combining separately the drive signal and the sense rebalance signal to excite the drive mode and regulate the sense mode to aid in isolating the drive and sense mode.

22. (ORIGINAL) The method of claim 21, further comprising combining separately the drive signal and the sense rebalance signal with a separate pair of programmable amplifiers to each excite the drive mode and regulate the sense mode.

23. (ORIGINAL) The method of claim 21, further comprising combining separately the drive signal and the sense rebalance signal with a separate pair of programmable filters to each excite the drive mode and regulate the sense mode.

24. (ORIGINAL) The method of claim 16, wherein the digital drive controller circuit comprises an automatic gain control for exciting the drive mode to the substantially constant amplitude.

25. (ORIGINAL) The method of claim 16, wherein the digital drive controller circuit and the digital rebalance controller circuit are programmable to match the vibratory gyroscope.

26. (ORIGINAL) The method of claim 25, wherein the programmable digital drive controller circuit and the programmable digital rebalance controller circuit each comprise one or more programmable finite impulse response (FIR) filters programmed to match the vibratory gyroscope.

27. (ORIGINAL) The method of claim 25, wherein the programmable digital drive controller circuit and the programmable digital rebalance controller circuit comprise one or more programmable amplifiers.

28. (ORIGINAL) The method of claim 27, wherein the one or more programmable amplifiers comprise a pair of programmable amplifiers, each pair programmed to combine separately the drive mode response signal and the sense mode response signal in the digital drive controller circuit and in the digital rebalance controller circuit to aid in isolating the drive and sense modes.

29. (ORIGINAL) The method of claim 27, wherein the one or more programmable amplifiers comprise a pair of programmable amplifiers, each pair programmed to combine separately the drive signal and the sense rebalance signal to excite the drive mode and regulate the sense mode to aid in isolating the drive and sense modes.

30. (ORIGINAL) The method of claim 16, wherein the drive loop comprises an automatic gain control for exciting the drive mode to the substantially constant amplitude and the programmable drive loop and the programmable rebalance loop each comprise one or more programmable finite impulse response (FIR) filters programmed to match the vibratory gyroscope;

wherein the drive mode response signal and the sense mode response signal are combined separately in the drive loop and in the rebalance loop each with a pair of programmable amplifiers and the drive signal and the sense rebalance signal are combined with a separate pair of programmable amplifiers to each excite the drive mode and regulate the sense mode; and

wherein the drive loop, the rebalance loop and the demodulator are implemented on a single application specific integrated circuit (ASIC).